

**CLAIMS**

1. A vacuum pump comprising a first pumping section, a first pump inlet through which fluid can enter the pump and pass through the first pumping section towards a pump outlet, second and third pumping sections, a second pump inlet through which fluid can enter the pump, the second and third pumping sections being arranged such that fluid entering the pump through the second inlet is separated into a first stream passing through the second pumping section towards the pump outlet and a second stream passing through the third pumping section away from the pump outlet, means for conveying fluid passing through the third pumping section towards the outlet, and at least one additional pumping section downstream from the first, second and third pumping sections for receiving fluid therefrom and outputting fluid towards the outlet.
2. A pump according to Claim 1, wherein the conveying means is arranged to convey fluid passing through the third pumping section to a location intermediate the second pumping section and said at least one additional pumping section.
3. A pump according to Claim 1 or 2, wherein the second and third pumping sections are located between the first pumping section and said at least one additional pumping section.
4. A pump according to Claim 3, wherein the conveying means is arranged to convey fluid passing through the first pumping section and fluid passing through the third pumping section to a location intermediate the second pumping section and said at least one additional pumping section.

5. A pump according to Claim 3, wherein the conveying means comprises a first conduit for conveying fluid passing through the first pumping section to a position intermediate the second and third pumping sections, and a second conduit for conveying fluid passing through the third pumping section to a location intermediate the second pumping section and said at least one additional pumping section.
6. A pump according to Claim 5, comprising baffle means for directing fluid passing through the first pumping section to the first conduit, and for directing fluid passing through the third pumping section to the second conduit.
7. A pump according to any preceding claim, wherein each of the pumping sections comprises a dry pumping section.
8. A pump according to any preceding claim, wherein said at least one additional pumping section comprises at least one molecular drag stage.
9. A pump according to any preceding claim, wherein each of the first, second and third pumping sections comprises at least one turbo-molecular stage.
10. A pump according to Claim 9, wherein each of the first, second and third pumping sections comprises at least three turbo-molecular stages.
11. A pump according to any preceding claim, comprising a drive shaft having located thereon at least one rotor element for each of the pumping sections.

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12. A pump according to Claim 11, wherein at least some of the rotor elements for at least the first, second and third pumping stages are integral with an impeller mounted on the drive shaft.

5 13. A pump according to Claim 12, wherein at least one of the rotor elements of the additional pumping section comprises a cylinder mounted on the impeller.

10 14. A pump according to Claim 13, wherein the cylinder is mounted on a disc integral with the impeller.

15. A differentially pumped vacuum system comprising two chambers and a pump according to any preceding claim for evacuating each of the chambers.

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